Although this method of subdividing the nervous organs and classifying their parts has many points of advantage over the older topographical method, it possesses as elaborated by Johnston its weaknesses and these are most clearly seen in the way in which certain organs of special senses are dealt with. The eye and its nervous connections are put in the somatic afferent division not because they are concerned with touch or any of the derived senses, but because in certain of the lower vertebrates the spinal nerve terminals are stimulated apparently by light. The olfactory apparatus is classed under the visceral sensory division because it is concerned with the acquisition of food. The weakness of this classification is apparent from the fact that the reasoning by which the author is led to assign the olfactory apparatus to the visceral sensory division, if applied to the optic apparatus, would bring these organs under that head instead of under the somatic sensory. In a similar way the organs of taste ought not to be classed as visceral sensory organs but as a somatic sensory mechanism, for the reason that the cutaneous sensory nerves of the lower vertebrates are stimulated by sour and salt substances much as our organs of taste are. In other words the classification proposed by Johnston and others, though avowedly physiological, will not stand the test of even the most elementary physiological facts. This state of affairs is probably due to the common practice of certain neurologists of assigning physiological significance to a part on the basis of purely morphological considerations and without once endeavoring to ascertain by experiment the real function of the part concerned. A detailed classification based upon such a method as this is bound to be erroneous and as in this movement the classification epitomizes results, a complete change of method must be inaugurated before sound conclusions can be arrived at. Johnston's book, though a praiseworthy effort, is characterized rather by an enthusiasm for a novel system of classification than by an appreciation of the weaknesses of this system.

G. H. PARKER.

The Sense of Touch in Mammals and Birds.[1]— The title of this volume is too inclusive, as is stated by its author in the introduction. It is essentially an anatomical account of epidermal markings and the papillae of the corium; other tactile organs are not considered. The first part of the book discusses palms and soles macroscopically.

[1] Kidd, Walter. The Sense of Touch in Mammals and Birds. London, Adam and Charles Black, 1907. 176 pp., 164 figs. Also The Macmillan Co., New York. $2.00.

Eighty-six mammals and eleven birds were examined. Cutaneous *ridges* were found to reach their full development only in primates. The coarse walking pads of the large carnivora consist of *rods*, a feature found also in the marsupial wolf of Tasmania, and to some extent in the eagle. The plantar surface of the other birds studied was merely corrugated, like that in Ornithorhynchus, Echidna and fourteen other mammals. Scaly palms and soles occurred in nine of the eighty-six mammals; smooth epidermis was found only in Proteles, and a complete covering of hair only in the rabbit. The palms and soles of the primates are then described in detail, with numerous figures.

The second part of the book deals with the form and arrangement of the papillae of the corium, and is illustrated from sections magnified generally fifteen or twenty diameters. Since half-tone text-figures will not print well on paper with a rough surface, such as is used in the first part of the book, the publishers have printed pages 81–144 on glazed paper. The volume concludes with a physiological discussion, a summary, and an extensive bibliography.

F. T. LEWIS.

Observations on the Young of the Red Kangaroo.— A red kangaroo, *Macropus rufus* (Desm.), was born in the Barnum and Bailey menagerie a short time before I became their zoologist, which was in March, 1904. At that time it was just beginning to put its head out of the pouch. The superintendent insisted that he had known of its presence in the pouch for two months and thought it must have been a month old when he first discovered it. About a month after my arrival the little fellow began coming out. Four months seems rather long for the young to remain in the pouch before beginning to come out, in view of their very rapid growth, but the period cannot be less than two months, and is probably three or even more. A month after beginning to come out, he would still rush back on the slightest provocation, going in head first and turning round, but leaving his tail and long hind legs protruding eighteen or twenty inches. In this position he presented a very comical picture.

The kangaroo, in common with other marsupials, is of a very low order of intelligence, and yet this mother was very solicitous for the safety and welfare of her son. At first she gently objected to his coming out, holding him in the pouch with her fore paws. But his budding curiosity and growing activity could not be suppressed and his excursions into the outer world became more and more frequent. At first she would restrain him with her paws from going to the far